

REMARKS/ARGUMENTS

In the Office Action of August 17, 2009, claims 1, 3-8 and 10-20 are rejected. However, Applicants hereby request reconsideration of the application in view of the below-provided remarks. No claims are amended, added, or canceled.

Claim Rejections under 35 U.S.C. 102 and 35 U.S.C. 103

Claims 1, 3-5, 7, 8, 10-12, 14, and 17-20 are rejected under 35 U.S.C. 102(e) as allegedly being anticipated by Jia et al. (U.S. Pat. No. 7,356,089 B2, hereinafter “Jia”). Claims 6 and 13 are rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Jia in view of Kwan et al. (U.S. Pat. Pub. No. 2003/0081692 A1, hereinafter “Kwan”). Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Jia in view of Curriyan et al. (U.S. Pat. Pub. No. 2005/0141460 A9, hereinafter “Curriyan”). However, Applicants respectfully submit that the pending claims are patentable over the cited references for the reasons provided below.

Independent Claim 1

Applicants respectfully assert that Jia does not disclose the limitation of “*the pre-coding of at least the first signal comprises a rotation of the first modulation constellation through a first angle*,” as recited in claim 1. Thus, Applicants respectfully assert that claim 1 is not anticipated by Jia and is now in condition for allowance.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. Verdegaal Bros. v. Union Oil of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

Jia discloses that a transmitter (501) includes a transmitter processor (502), a first transmit antenna (504-1) and a second transmit antenna (504-2). (See Fig. 5 and column 7, lines 51-53 of Jia). Jia also discloses that the first transmit antenna (504-1) uses symbols from a constellation (200B) shown in Fig. 2B of Jia and that the constellation (200B) is equivalent to a constellation (200A) that is shown in Fig. 2A of Jia and is used by the second transmit antenna (504-2), after a rotation by a phase offset of 45 degrees.

(See Figs. 2A and 2B, and column 7, lines 57-62 of Jia). That is, Jia discloses that the constellation of the first transmit antenna (504-1) is equivalent to the constellation of the second transmit antenna (504-2) rotated by the phase offset of 45 degrees. However, Applicants respectfully assert that Jia does not disclose that the transmitter (501) pre-codes a signal at the first transmit antenna (504-1) through a rotation of the constellation of the first transmit antenna (504-1). As a result, Applicants respectfully assert that Jia does not disclose “*the pre-coding of at least the first signal comprises a rotation of the first modulation constellation through a first angle*,” as recited in claim 1. Thus, Applicants respectfully assert that claim 1 is not anticipated by Jia.

Dependent Claims 3-7 and 15-19

Claims 3-7 and 15-19 depend from and incorporate all of the limitations of independent claim 1. Thus, Applicants respectfully assert that claims 3-7 and 15-19 are allowable at least based on an allowable claim 1. Additionally, claims 5 and 19 are allowable for further reasons, as described below.

Claim 5

Claim 5 recites that “*the transmitter is arranged to pre-code at least the first signal after receipt of a first signal from a receiver of the at least first and second simultaneously transmitted signals*” (emphasis added), which is not disclosed by Jia. Jia discloses that a number “M” of transmit antennas (104) transmit a number “M” set of symbols to a receiver (111), where the number “M” set of symbols have phase offsets. (See Fig. 1 and the paragraph between column 8, line 56 and column 9, line 5 of Jia). However, Applicants respectfully assert that Jia does not disclose pre-coding one set of symbols of the number “M” set of symbols after receipt of a signal from the receiver (111). Thus, Applicants respectfully assert that Jia does not disclose that “*the transmitter is arranged to pre-code at least the first signal after receipt of a first signal from a receiver of the at least first and second simultaneously transmitted signals*” (emphasis added), as recited in claim 5. As such, Applicants respectfully assert that claim 5 is not anticipated by Jia.

Claim 19

Claim 19 recites in part that “*the first transmitted signal is orthogonal to the second transmitted signal*” (emphasis added), which is not disclosed by Jia. As described above, Jia discloses that a number “M” of transmit antennas (104) transmit a number “M” set of symbols to the receiver (111), where the number “M” set of symbols have phase offsets. Jia also discloses that the phase offset between two adjacent transmit antennas (104) is $90/M$ degrees. (See the paragraph between column 8, line 56 and column 9, line 5 of Jia). Since multiple transmit antennas (104) are involved in Jia, the number “M” cannot be equal to one (1), and thus, the number “M” must be equal to two (2) or more. Consequently, the phase offset between two transmit antennas (104) is less than 90 degrees. Because Jia discloses that the phase offset between two transmit antennas (104) is less than 90 degrees, Applicants respectfully assert that Jia does not disclose “*the first transmitted signal is orthogonal to the second transmitted signal*” (emphasis added), as recited in claim 19. As such, Applicants respectfully assert that claim 5 is not anticipated by Jia.

Independent Claim 8

Claim 8 includes similar limitations to claim 1. Because of the similarities between claim 1 and claim 8, Applicants respectfully assert that the remarks provided above with regard to claim 1 apply also to claim 8. Thus, Applicants respectfully assert that claim 8 is not anticipated by Jia and is now in condition for allowance.

Dependent Claims 10-14 and 20

Claims 10-14 and 20 depend from and incorporate all of the limitations of independent claim 8. Thus, Applicants respectfully assert that claims 10-14 and 20 are allowable at least based on an allowable claim 8. Additionally, claims 12 and 20 include similar limitations to claims 5 and 19, respectively. Because of the similarities between claims 12 and 20 and claims 5 and 19, Applicants respectfully assert that the remarks provided above with regard to claims 5 and 19 apply also to claims 12 and 20.

CONCLUSION

Applicants respectfully request reconsideration of the claims in view of the remarks made herein. A notice of allowance is earnestly solicited.

Respectfully submitted,
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